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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,484	08/08/2005	Jean-Claude Dulac	0528-1134	5539

466   7590   05/03/2007

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EXAMINER
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ART UNIT	PAPER NUMBER
2128	

MAIL DATE	DELIVERY MODE
05/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/518,484	DULAC ET AL.
	Examiner	**Art Unit**	
	Thai Phan	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>20 December 2004</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-14</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-14</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>20 December 2004</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>12/04</u>.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

U.S. Patent and Trademark Office

PTOL-326 (Rev. 08-06)   Office Action Summary   Part of Paper No./Mail Date 20070425

DETAILED ACTION

This Office Action is in response to patent application S/N: 10/518,484, filed on

12/20/2004. Claims 1-14 are pending in the Action.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the .
conditions and requirements of this title.

The claimed invention is directed to non-statutory subject matter. The claimed

invention, especially, the claim embodiment is directed to a mathematical computation to

find properties in terms of mathematical values of the seismic traces for the seismic trace

construction. The claims do not produce an expected useful result and concrete outcome

for data extraction representation.

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set
forth in section 102 of this title, if the differences between the subject matter sought to be patented and
the prior art are such that the subject matter as a whole would have been obvious at the time the
invention was made to a person having ordinary skill in the art to which said subject matter pertains.
Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Hildebrand, H., US patent no. 5,615,171 in view of Van Riel et al, US patent no.

6,665,615 B2.

As per claim 1, Hildebrand discloses a process for extracting a geological horizon and related properties from a seismic representation, in which there is constructed a continuous function $S_{ij,k}(t)$ by interpolation or approximation of the discrete seismic functions of a multidimensional seismic matrix, said function being designated as a "continuous local seismic trace", comprising the following steps:

using adjacent continuous local seismic traces, the value of offset rendering the maximum their correlation function (col. 4, lines 40-59);

taking as conditional neighborhood a central continuous local seismic trace $S_{ij,k}(t)$, the sub-neighborhood consisting in adjacent traces $S_{pq,k}(t)$ corresponding to optimum offsets $h_{ij,pq,k}$ associated with correlations $R_{ij,pq,k}(h_{ij,pq,k})$ greater than a predetermined threshold comprised between 0 and I (col. 6, lines 55-65);

constructing a two-dimensional extraction matrix adapted to be filled with extracted points belonging to the same horizon as the one passing through the seed point (col. 7, lines 5-20) (col. 10, line 50 to col. 11, line 45),

selecting a seed point $P(i,j,t)$ and determining the point $P(i,j,k)$ of the three-dimensional seismic matrix that is vertically closest,

estimating the properties associated with the conditional neighborhood and filling the two-dimensional extraction matrix with properties by translation of the current variable (t) of the optimum offset value $(h_{ij,pq,k})$ corresponding to the vertically nearest point (i,j,k).   Hildebrand does not expressly disclose optimum (vertical) offset for the seismic traces as claimed. Such feature is well-known in the art. In fact, Van Riel teaches a

method for processing seismic trace data using offset to correlate seismic trace data

arrival (col. 16, lines 46-57).

This would motivate practitioner in the art at the time of the invention was made to

combine the teaching in Van Riel into the Hildebrand in order to obtain optimal offset data

by correlating relevant trace for property extraction as claimed.

As per claim 2, Hildebrand discloses in the process in which there is used as the

seed point of step d) all the new points stored in the two-dimensional matrix of step b) and

not yet used as grain points (col. 4, lines 20-24).

As per claim 3, Hildebrand discloses the process according to claim 1 in which the

content of the two-dimensional matrix of step c) is successively filled in the

course of successive extraction repetitions and interpolation (col. 11, line 52 to col. 12,

line 37).

As per claims 4-6, Hildebrand discloses the content of the two-dimensional

matrix of step c) is successively replaced by a mean of the successive contents in the

course of extraction repetition, attributes volume, and visualization (col. 13, lines 18-35).

As per claim 7, Van Riel teaches a means and method for processing seismic

trace data using optimal offset of two adjacent continuous local seismic trace for trace

correlation, the value of offset rendering maximum their correlation function, means to

take as conditional neighborhood of a reference central continuous local seismic trace

$S_{ij,k}(t)$ the sub-neighborhood consisting in adjacent traces $S_{pq,k}(t)$ corresponding to

optimum offsets $h_{ij,pq,k}$ associated with correlations $R_{ij,pq,k}(h_{ij,pq,k})$ greater than a

predetermined threshold comprised between 0 and i, means to construct a two-

dimensional extraction matrix adapted to be filled with extracted values, means to fill the extraction matrix with properties offset by translation or shifting (col. 7, lines 34-59, col. 16, lines 46-57).

This would motivate practitioner in the art at the time of the invention was made to combine the teaching in Van Riel into the Hildebrand in order to obtain optimal offset data by correlating trace data with different extraction properties.

As per claim 8-10, Hildebrand discloses memory means for data, means for visualization, computer for executing the processing method (col. 13, lines 16-45).

As per claims 11-14, Hildebrand discloses the process according to claim 1 in which the content of the two-dimensional matrix of step c) is successively filled in the course of successive extraction repetitions and interpolation (col. 11, line 52 to col. 12, line 37). Hildebrand also discloses the content of the two-dimensional matrix of step c) is successively replaced by a mean of the successive contents in the course of extraction repetition, attributes volume, horizontal extraction, and visualization (col. 13, lines 18-35).

Conclusion

1.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure

1.   US patent no. 3,731,269, issued to Judson et al, on May 1973

2.   US patent no. 6,138,075, issued to Yost, Lawrence, on Oct. 2000

3.   US patent application publication no. 2004/0204859, issued to Knoblock, Charles, on Oct. 2004.

2.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai Phan whose telephone number is 571-272-3783. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on 571-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

3.   Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Apr. 27, 2007

THAI PHAN
PRIMARY EXAMINER
TECHNOLOGY CENTER 2100